

Claims:

1. Process for continuously preparing alkyl (meth)acrylates of the formula (C)

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where  $\text{R}_1$  is an H or  $\text{CH}_3$  group and  $\text{R}_2$  is a linear, branched or cyclic alkyl radical or aryl radical having from 2 to 12 carbon atoms by reacting a compound of the formula (B)

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- 15 where  $\text{R}_2$  is as defined above with methyl (meth)acrylate (A)



- 20 where  $\text{R}_1$  is an H or  $\text{CH}_3$  group in the presence of a transesterification catalyst and in the presence of at least one polymerization inhibitor in an apparatus for continuous transesterification, characterized in that
- 25 the reactants are continuously fed to a suitable reaction apparatus (1) and that the methanol resulting from the reaction is continuously removed as an azeotropic methanol/methyl (meth)acrylate mixture (13) with the aid of a distillation column (2), and also:
- 30 - the reaction mixture is continuously conducted from the reaction apparatus into a distillation column (3) in which distillation under reduced pressure is used to remove the volatile components (A, B, methanol) and a very low proportion of

product ester (C) overhead which are recycled into the reaction apparatus and to remove the product ester (C) together with the catalyst and the polymerization inhibitors and also high-boiling by-products from the bottom of the column;

5        -        the bottom stream (15) from the distillation column (3) is fed continuously to an evaporator (5) in which distillation under reduced pressure is used to separate the product ester (C) from the catalyst and the polymerization inhibitors and also high-boiling by-products.

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2.    Process according to Claim 1, characterized in that

15    the vapour stream of the evaporator (5) is fed continuously to a distillation column (4) in which distillation under reduced pressure is used to remove the highly pure product ester (C) (16) overhead and to remove the catalyst and the polymerization inhibitors and also the high-boiling by-products with a small portion of product ester (C) via the bottom.

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3.    Process according to Claim 1, characterized in that

25    the bottom stream of the distillation column (4) and of the evaporator (5) is fed continuously to a further film evaporator (6) in which distillation under reduced pressure is used to remove the catalyst and the polymerization inhibitors and also the high-boiling by-products via the bottom and to remove the remaining product ester (C) overhead which is then recycled to the distillation column (3) or to the reaction apparatus (1).

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35    4.    Process according to Claim 1, characterized in that the alcohol (B) is fed to the reaction apparatus via the distillation column (2) for dewatering.

5. Process according to Claim 1,  
characterized in that  
the molar ratio of methyl (meth)acrylate to alcohol in  
the feed to the reactor is from 1 to 2, preferably 1.05  
5 - 1.15.
6. Process according to Claim 1,  
characterized in that  
the transesterification catalyst used is a tetraalkyl  
10 titanate.
7. Process according to Claim 1,  
characterized in that  
the catalyst is used in an amount of 0.1-2% by weight,  
15 based on MMA used.
8. Process according to Claim 7,  
characterized in that  
the catalyst is used in an amount of 0.2-1% by weight,  
20 based on MMA used.
9. Process according to Claim 1,  
characterized in that  
the polymerization inhibitor used is either  
25 phenothiazine, tert-butylcatechol, hydroquinone  
monomethyl ether, hydroquinone or a mixture thereof in  
an amount of 100 to 5000 ppm, based on the reaction  
mixture.
- 30 10. Process according to Claim 1,  
characterized in that  
oxygen is additionally used as a polymerization  
inhibitor.
- 35 11. Process according to Claim 1,  
characterized in that  
the alcohol used is preferably n-butanol or isobutanol.
12. Process according to Claim 1,

characterized in that  
the pressure in the first distillation column (3) is 20  
to 200 mbar.

- 5 13. Process according to Claim 1,  
characterized in that  
the pressure in the second distillation column (4) and  
in the film evaporators (5) (6) is 20 to 200 mbar.
- 10 14. Process according to Claim 1,  
characterized in that  
the residence time in the reaction apparatus is 0.5 to  
1.5 hours.
- 15 15. Process according to Claim 1,  
characterized in that  
the evaporator (5) is a film evaporator.
16. Process according to Claim 3,  
20 characterized in that  
the evaporator (5) and the evaporator (6) are film  
evaporators.
17. Process according to Claim 1,  
25 characterized in that  
the alcohol used is 2-ethylhexanol.